

Abstract

Measurement of the inclusive jet and dijet cross sections using 2010 data from the ATLAS detector and calibration studies and simulation of the ATLAS forward calorimeter

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Data collected during the 2003 beam test of the ATLAS Forward Calorimeter has been analysed, and results for the energy resolution and response of the calorimeter are presented. The effect of inactive material placed in the beamline on the detector performance has also been studied. A Monte Carlo simulation of the Forward Calorimeter has also been constructed, and results obtained from this simulation are compared to data, with generally good agreement found between the two. The inclusive jet and dijet cross sections have also been measured using 37 pb^{-1} of data collected at ATLAS during 2010. The kinematic reach of this measurement extends into the forward region of the ATLAS detector, covering rapidities that have not previously been studied at a hadron-hadron collider. This is accomplished through a sophisticated triggering scheme, in which jets in the transition region were selected provided they satisfied either the forward jet trigger or the central jet trigger conditions. The results are compared to theoretical predictions obtained using NLO event generators (NLOJet++ and POWHEG), which generally agree with the measured data.